

IN THE CLAIMS:

Please cancel claims 1-30 without prejudice to or disclaimer of the subject matter recited therein.

Please add new claims 31-46 as follows:

LISTING OF CURRENT CLAIMS

Claims 1-30. (Canceled)

Claim 31. (New) A motor having a rotor with built-in permanent magnets, the rotor comprising:

- a) a cylindrically shaped rotor core having:
 - i) a central axial hole;
 - 5 ii) a plurality of arched troughs formed around the central axial hole; and
 - 10 iii) a plurality of openings formed around the arched troughs, the plurality of openings being equally spaced apart, each of the plurality of openings having at least four sides, a first side and a second side of each of the plurality of openings being parallel; and
- 15 b) a plurality of permanent magnets, each of the plurality of permanent magnets having a cross-section that matches each of the plurality of openings, each magnet being inserted into one of the plurality of openings.

Claim 32. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the permanent magnets are positioned with interlaced magnetic poles.

Claim 33. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, further comprising a stator having a plurality of teeth forming an cylindrical interior into which the rotor is inserted, the plurality of teeth being separated by a plurality of slots.

Claim 34. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the cylindrically shaped rotor core is made of permeable material.

Claim 35. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the cylindrically shaped rotor core is made of solid silicon steel.

Claim 36. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the cylindrically shaped rotor core includes a plurality of stacked silicon steel pieces form the cylindrically shaped rotor core.

Claim 37. (New) The motor having the rotor with built-in permanent magnets according to Claim 36, wherein the steel pieces further comprise a plurality of dents, each dent forming a concave point on a first surface of the steel pieces and a convex point on a second surface of the steel pieces, such that the plurality of silicon steel pieces are aligned to form the cylindrically shaped rotor core by inserting the plurality of convex points on one of the plurality of silicon steel pieces into the plurality of concave points on another of the plurality of silicon steel pieces.

Claim 38. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein a third side and a fourth side in each of the plurality of openings are each parallel with an outer radius of the cylindrically shaped rotor core.

Claim 39. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein a third side and a fourth side in each of the plurality of openings are straight.

Claim 40. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein a third side and a fourth side in each of the plurality of openings each have a curved shape.

Claim 41. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein each of the plurality of openings in the cylindrically shaped rotor core has a trapezoid cross-sectional configuration.

Claim 42. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the plurality of openings in the cylindrically shaped rotor core includes four openings, and the plurality of permanent magnets includes four magnets.

Claim 43. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the at least four sides in the plurality of openings of the cylindrically shaped rotor core includes six sides, a fifth side of each of the plurality of openings being parallel with a sixth side of an adjacent one of the plurality of openings.

Claim 44. (New) The motor having the rotor with built-in permanent magnets according to Claim 38, wherein the at least four sides in the plurality of openings of the cylindrically shaped rotor core includes six sides, a fifth side of each of the plurality of openings being parallel with a sixth side of an adjacent one of the plurality of openings.

Claim 45. (New) The motor having the rotor with built-in permanent magnets according to Claim 39, wherein the at least four sides in the plurality of openings of the cylindrically shaped rotor core includes six sides, a fifth side of each of the

plurality of openings being parallel with a sixth side of an adjacent one of the plurality of openings.

Claim 46. (New) The motor having the rotor with built-in permanent magnets according to Claim 31, wherein the plurality of openings are spaced apart a distance less than 0.7 mm.